HarvRESt

Harnessing the vast potential of RES for sustainable farming

HarvRESt
Greener Farming with RES

Funded by
the European Union

www.harvrest.eu

Why HarvRESt?

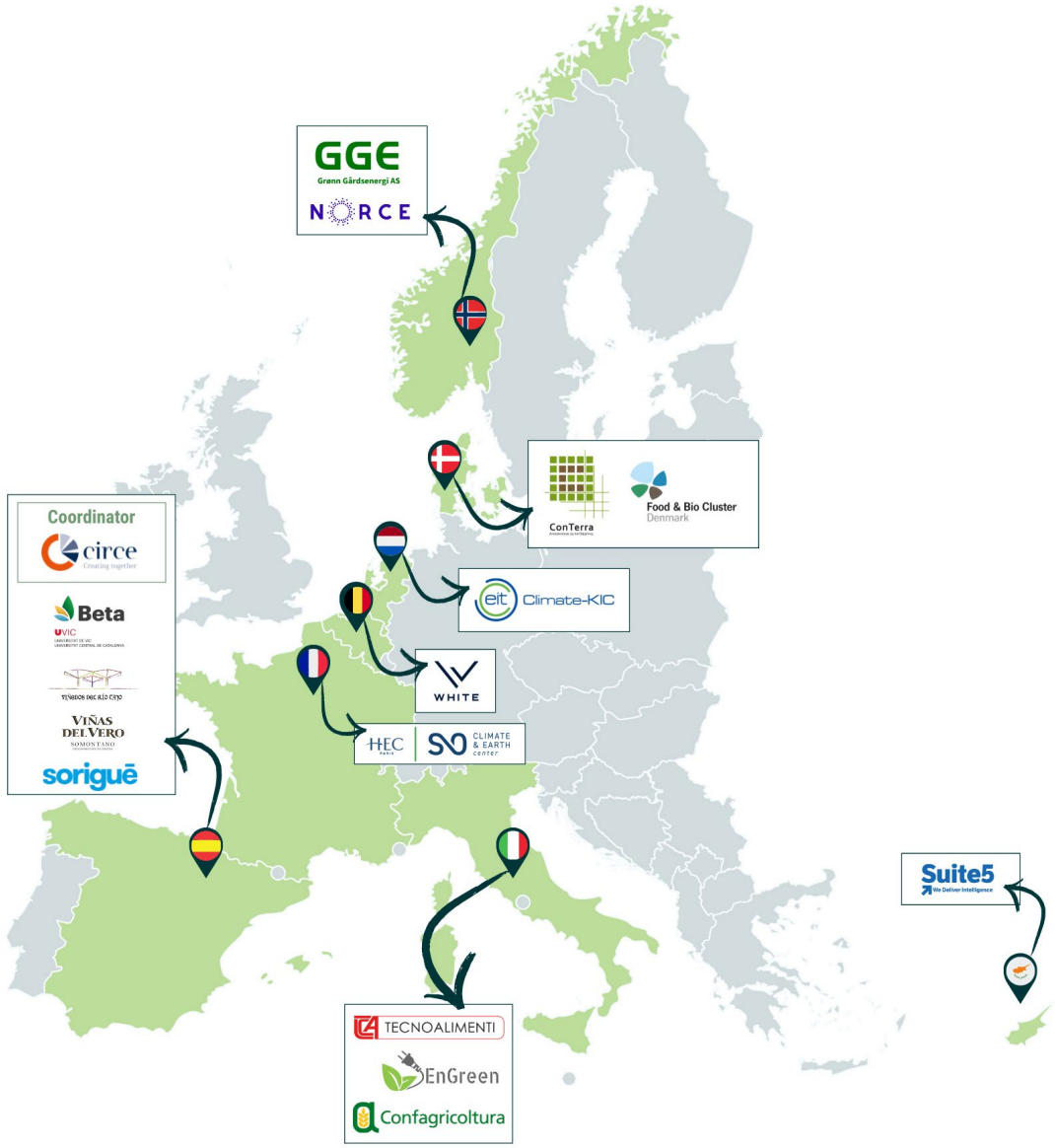
The HarvRESt project has been launched to address the need of enhancing the use of Renewable Energy Sources (RES) along with sustainable farming methods, aiming to **help the agricultural and food industry reduce carbon emissions**.

However, deciding how best to integrate green energy on a farm is not without its challenges. The decision is a complex one, with many factors to be taken into account. HarvRESt will therefore work on solutions that alleviate this challenge.

Our main objective

More knowledge for better decisions

The main objective of HarvRESt is to improve the existing knowledge of options for reducing carbon emissions on farms, by maximising synergies between the integration of RES and sustainable agricultural practices.



HarvRESt in figures

Topic: HORIZON-CL6-2023-CLIMATE-01-7
Enhancing the sustainable production of renewable energy at farm-level

Type of action: HORIZON-RIA
HORIZON Research and Innovation Actions

Coordinator: CIRCE

Duration: 36 months (Jan 2024 - Dec 2026)

Max. Grant Amount: 4 998 685€

Number of partners: 17

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Integrating RES production into agriculture for the benefit of the farmers and climate

The integration of renewable energy sources on farms offers many benefits for both the farmers and the climate. With this approach farms will:

- ✓ **become climate neutral**
- ✓ **optimise their production**
- ✓ **reduce their impact on natural resources**
- ✓ **reduce their impact on biodiversity**
- ✓ **provide energy services to communities**
- ✓ **diversify their economic income**

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Use cases

	ITALY	DENMARK	SPAIN	NORWAY
TECHNOLOGIES	PV	Biogas	PV, biogas, storage, electrolysers, biomass	PV, thermal storage, batteries, biogas, hydro, wind
ACTIVITY	Agro-industrial, farmers	Large scale biogas plants	Winery and dairy products	Livestock farming
KEY OBJETIVE	Explore joint models for promoting RES in agro communities and along the food value chain	Enhance biogas planning tool for Danish farms, evaluating GHG emissions, nutrient balances, and leveraging big data.	Enhance the production management: 1. Digital management of a winery to optimise RES assets and the consideration of the impact of RES on crops. 2. Biogas production modelling from agro-residues	Development of an intelligent energy system for total GGE decarbonization
PARTNERS	EnG, CONFAGRI, FSDC, TCA	CT, FBCD	VdV, VRT, SORIGUÉ, BETA & CIRCE	GGE, NORCE

Main outcomes of HarvRESt

An Agricultural Virtual Power Plant (AVPP)

Capable of running diverse scenarios and farm configurations. The tool will determine the best operational procedures for a given RES solution.

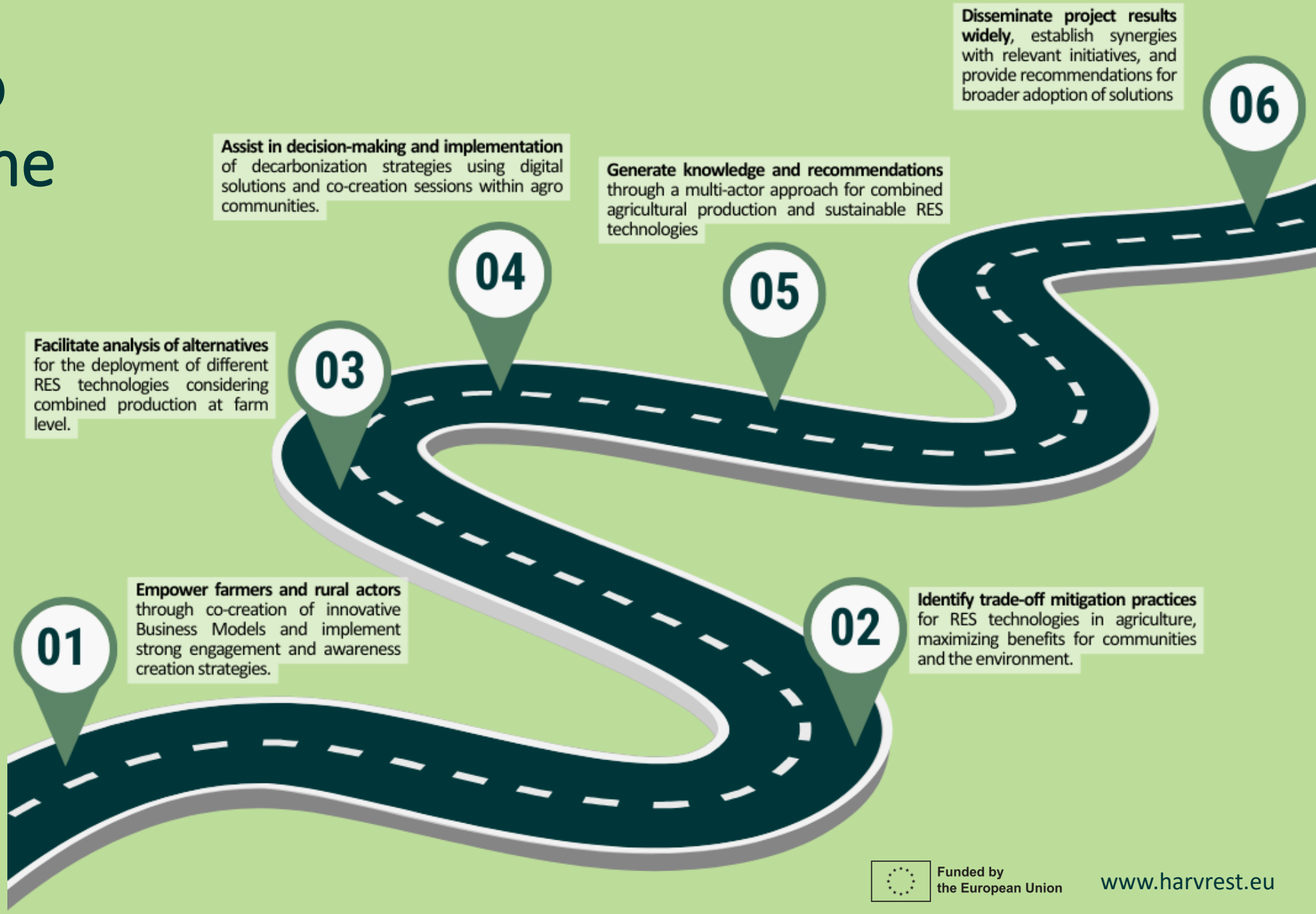
A Decision Support System (DSS)

To make recommendations of the best RES integration solutions & operation procedures for optimized production based on data from AVPP.

A Business Model Catalogue

Containing relevant innovative business models, considering financial schemes and incentives while identifying risks.

Our path to achieving the objective involves



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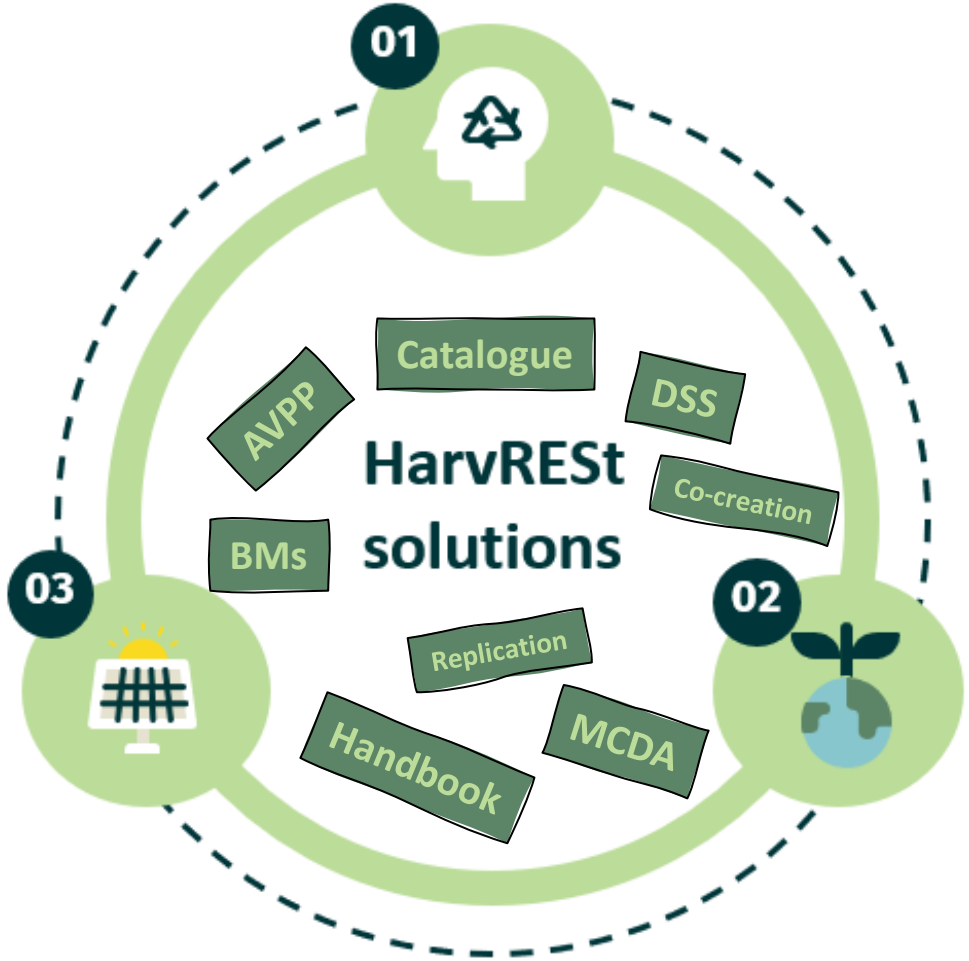
Our approach

1. **Social engagement and Innovative Business Models**
   - Create multi-actor engagement strategies to foster synergies between the whole agri-food chain and energy sector.
2. **Agricultural and environmental tradeoffs**
   - Create a mitigation catalogue and a framework to monitor the performance of combined production (energy, food and feed).
   - Methodology to assess soil quality and carbon/water footprints.
3. **Renewable energy sources and smart energy systems**
   - Modeling the behavior of Renewable Energy Sources (RES) and their interaction with other elements of the agro-energy system
   - Forecasting algorithms and energy management systems



HarvRESt pillars will be **complementary** and will be developed in close collaboration, aiming at providing a **holistic solution** that **maximises energy**, **food and feed** production while **preserving the local environment** and biodiversity.

Expected impacts

- **Scientific**
  - New evidence and knowledge on the trade-offs and impacts of RES integration at farm level.
- **Economic/technological**
  - Better performing RES assets and farms, benefiting from diversified and enhanced incomes and achieving higher levels of circularity and resources independence.
  - Novel business models available for a variety of farms.
- **Societal**
  - Increased levels of awareness towards the installation of RES and the promotion of goods that are climate neutral.
  - A whole set of stakeholders engaged and trained to achieve greener behaviours and foster RES, resulting as well in the creation of high-quality jobs within the rural environment.

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